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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/599,026	Applicant(s) GOTTSCHALK-GAUDIG ET AL.	
	Examiner Daniel S. Metzmaier	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/10/2010 & 8/2/2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-18, 20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-13, 15-18, 20 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/10/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 10-18 and 20-21 are pending.

Election/Restrictions

1. Applicant's election with traverse of Group I, Claims 10-13, 15-18 and new claims 20-21 in the reply filed on 02 August 2010 is acknowledged. The traversal is on the ground(s) that there is a special technical feature common to the emulsion claims and process claim. This is not found persuasive because the expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art. The restriction presented evidence to the contrary, which applicants have not rebutted.

Applicants' comments regarding rejoinder have been noted.

The requirement is still deemed proper and is therefore made FINAL.

Terminal Disclaimer

2. The terminal disclaimer filed on 02 August 2010 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on U.S. Patent Application Serial No. 11/573,379, and U.S. Patent No. 7,541,405, has been reviewed and is accepted. The terminal disclaimer has been recorded.

Drawings

3. The drawings were received on 02 August 2010 are acceptable.

Claim Objections

4. Claims 15-18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 15-18 are not further limiting since they include elements / components defining compositions that would not require the emulsion of claim 10 to retained the oil-in-water or water-in-oil structure of independent claim 10. Said claims should be rewritten as independent claims since they do not further limit the compositions of claim 10.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 15-18 are indefinite since it is unclear what are the other elements / components of the claimed compositions and therefore, it is unclear if the emulsion of claim 10 is retained as claimed in claim 10 or transforms into another compositional form. It is further unclear how said viscosity limitation is interpreted regarding claims 15-18, particularly claim 18.

Furthermore, it is unclear how said emulsions were employed to formulate said compositions and if said emulsions retain their emulsion form as claimed.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 10-12, 15-18 and 20-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Barthel et al, US PGPUB 2003/0175317 A1. Barthel et al (abstract; Figures; paragraphs [0033] et seq, particularly [0041] and [0050]; examples and claims) disclose w/o/w and o/w/o multiple emulsions stabilized with partially hydrophobed pyrogenic silica, e.g., HDK H30. The silica HDK H30 appears to read on the silica materials of the instant claims. The relative viscosity would have been inherent to at least some of the compositions as

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characterized in the Barthel et al reference, particular attention to compositions of the w/o and w/o/w type structures, wherein the internal aqueous phase would be expected to have a lower viscosity than the emulsion due to the viscosity increasing properties of the partially hydrophobed silica effect thereon.

To the extent Barthel et al differs in the relative viscosity limitation, Barthel et al (paragraph [0090], [0100], [0112], and [0125]) discloses the upper limit of partially hydrophobed silica is restricted by the particle in-phase rheology.

Barthel et al (paragraphs [0024] and [0132] et seq) further teaches the compositions have application of several diverse utilities including pharmacy, medicine, agrochemistry, foodstuffs and animal feeds, in cosmetics, and in chemical catalysis. These utilities include emulsion compositions with increased viscosity. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the viscosities dependent on the desired end use of the compositions disclosed in the Barthel et al reference.

10. Claims 10-11, 15-18 and 20-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over B. P. Binks et al, "Transitional Phase Inversion of Solid-Stabilized Emulsions Using Particle Mixtures", *Langmuir*, 2000, 16, 3748-3756.

Binks et al (page 3748, experimental section, et seq) discloses the making of oil-in-water emulsions employing hydrophobic fumed silica (*i.e.*, pyrogenic silica - denoted "HDK H30"). HDK H30 is characterized as having a BET surface area of ~ 250 m²/gm. It is further characterized as prepared by reacting hydrophilic silica with

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dichlorodimethyl; silane so that about half the surface SiOH groups are reacted and resulting in a surface Si-OH concentration of $\sim 1 \text{ SiOH} / \text{nm}^2$.

Binks et al (page 3748, experimental section, et seq) further discloses the conductivity measurements were done with a background electrolyte of 0.01 M (i.e., moles / ℓ) of sodium chloride (NaCl). This equates to an ionic strength based on the 0.01 M NaCl of 0.005 (instant claim 12) and an electrolyte concentration of 0.01 moles / ℓ (instant claim 14). See Figures regarding the conductivity, the droplet size, and the at least some multiple emulsion form of the emulsions. The remaining claims 18-22 do not distinguish over the Binks et al compositions.

The surface energy of the HDK H30 silica would have been expected to have been inherent since the materials are otherwise the same and are made by the same process as the processes of the particles in the claimed compositions.

To the extent the properties of the silica dispersant, the electrolyte concentrations and/or the lack of a characterization of the materials for an intended use in Binks et al differ from the claims, it would have been obvious to one of ordinary skill in the art at the time of applicants' invention to vary the properties, e.g., hydrophobic/hydrophilic content, of the silica materials or the electrolyte concentration for the compositions in the Binks et al reference for the advantage of emulsion stability. The intended uses of claims 19-22 are all prior art recognized uses of emulsions and would have been an obvious choice for the emulsions of the Binks et al reference.

The properties of relative viscosity as claimed, and/or creaming, sedimentation or phase separation would have been inherent and/or obvious for the advantageous and desirable stability of the emulsions of the Gottschalk-Gaudig et al '405 reference.

11. Claims 10-13, 15-18 and 20-21 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Gottschalk-Gaudig et al, US 7,541,405 B2. Gottschalk-Gaudig et al '405 (abstract; column 2, lines 53 et seq; column 12, lines 23-33; column 6, lines 48-52; column 10, lines 25-34; examples, particularly example 3; and claims) discloses polymer dispersions, which employ pyrogenically derived silica stabilizing agents as instantly claimed.

The claimed silica stabilizing agent is characterized as having the following limitations, which are correspondingly disclosed in the Gottschalk-Gaudig et al '405 compositions.

(1) The limitation of "pyrogenic silica": see Gottschalk-Gaudig et al '405 at column 7, lines 56 et seq, particularly column 8, lines 20 et seq, column 10, lines 44 et seq; example 1 and claims.

(2) The limitation of "partly silylated in a manner such that the content of non-silylated surface silanol groups on the silica surface is from not more than 95 % to not less than 50% of the starting silica, or from 1.7 to 0.9 SiOH groups per nm² of silica surface": see Gottschalk-Gaudig et al '405 at column 8, lines 5-30, example 1, and claims, particularly claim 20.

(3) The limitation of “the dispersion fraction of the surface energy γ -s-D being from 30 to 80 mJ/m²”: see Gottschalk-Gaudig et al ‘405 at column 7, lines 4-24, examples and claims, particularly claims 18 and 19.

(4) The limitation of “the specific BET surface area being from 30 to 500 m²/g”: see Gottschalk-Gaudig et al ‘405 at column 8, lines 31-48, examples and claims.

Gottschalk-Gaudig et al ‘405 (examples, particularly example 3) discloses forming an oil-in-water emulsion comprising 60 gms CaCO₃, a calcium salt, in the emulsion of about 150 gms. At least 20 micrograms / l of Ca²⁺ would have been expected to have dissolved in the Gottschalk-Gaudig et al ‘405 emulsions. Furthermore, Gottschalk-Gaudig et al ‘405 (column 6, lines 48-52) characterizes the solubility of the component (B), which includes the silica dispersant, at a given pH and an electrolyte concentration of 0.11 mole.

Gottschalk-Gaudig et al ‘405 (example 3) characterizes the siloxane viscosity as 20,000 mPas and the emulsion as a high-viscosity, flow resistant, white oil-in-water emulsion. The claimed relative viscosity required the emulsion viscosity to be higher than the pure dispersed phase, *i.e.*, η/η_0 is defined as from 1 to 10⁶. η/η_0 values greater than 1 require the emulsion viscosity to be higher than the pure homogeneous phase. Since the emulsion has the siloxane at about 0.5 or more of the phase volume, a calculation of η_{rel} can be within a broad range of about 2 and in excess of the 10⁶.

To the extent Gottschalk-Gaudig et al ‘405 differs from the claims in the relative viscosity, the relative viscosity is clearly recognized in the Gottschalk-Gaudig et al ‘405 reference as affecting the solubility of the silica dispersing agents by their specific

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disclosure in defining the solubility of the dispersing agents and the further use of rheological agents as taught in the Gottschalk-Gaudig et al '405 reference (column 12, lines 12-16; column 16, lines 34-41).

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to vary the electrolyte concentration for the advantage of improving the stability of the desired emulsion based on the solubility of the dispersing agent, i.e., partially hydrophobed pyrogenic silica.

See columns 2 to 5, lines 53 to 17, regarding the use of epoxy resins as the dispersed phase of the emulsions of the Gottschalk-Gaudig et al '405 reference. The properties of creaming, sedimentation or phase separation would have been inherent and/or obvious for the advantageous and desirable stability of the emulsions of the Gottschalk-Gaudig et al '405 reference.

12. Claims 10-13, 15-18 and 20-21 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wacker Chem GmbH, EP 1526153 A1, as evidenced by Gottschalk-Gaudig et al, US 7,541,405 B2.

Wacker Chem GmbH is an English language patent family member of Gottschalk-Gaudig et al '405. They are deemed to be based and/or have the same or substantially the same disclosure. The rejection is based on the Wacker Chem GmbH reference. All citations refer to the Gottschalk-Gaudig et al '405 and the corresponding disclosure in the Wacker Chem GmbH reference.

Wacker Chem GmbH and Gottschalk-Gaudig et al '405 (abstract; column 2, lines 53 et seq; column 12, lines 23-33; column 6, lines 48-52; column 10, lines 25-34; examples, particularly example 3; and claims) discloses polymer dispersions, which employ pyrogenically derived silica stabilizing agents as instantly claimed for the reasons as set forth in the anticipation rejection over the Gottschalk-Gaudig et al '405 reference.

13. Claims 10-12, 15-18 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over B. P. Binks et al, "Transitional Phase Inversion of Solid-Stabilized Emulsions Using Particle Mixtures", *Langmuir*, 2000, 16, 3748-3756 (hereafter Binks et al (1)), in view of B. P. Binks and S. O. Lumsdon, "Effects of oil type and aqueous phase composition on oil-water mixtures containing particles of intermediate hydrophobicity", *Phys. Chem. Chem. Phys.*, 2000, 2, 2959-2967 (hereafter Binks et al (2)).

Binks et al (1) discloses emulsions as set forth in the above rejection over the same reference.

Binks et al (1) differs from the claims in the characterization of the relative viscosity and the use of organosiloxane oils.

Binks et al (2) teaches related teachings to Binks et al (1) and compares and contrast different oils and polar phases including glycol, glycerin and formamide. Binks et al (2) (pages 2961-2962) teaches emulsions prepared by replacing water with formamide behaved similar and replacing the oil phase with organosiloxanes to form siloxane emulsions. Binks et al (2) also teaches the use of glycol and glycerin as conventional cosolvents.

These references are combinable because they teach making emulsions with hydrophobicized pyrogenic silicas. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ organosiloxanes as the oil to form siloxane emulsions and formamide as a partial replacement of the water as a functional equivalent where solvency or viscosity modification is required and/or desired. Furthermore, it would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ glycol or glycerin as a cosolvent or cosurfactant and/or conventional use as a freeze point depressant in formulating emulsions for a desired end use. The remaining claims are included herein for the reasons in the above rejection.

14. Claims 10-13, 15-18 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barthel et al, US 5,686,054. Barthel et al (abstract, column 1, lines 5 et seq; examples and claims) disclose apolar pyrogenic silica having thickening effect (see column 1, lines 24-43; and column 9, lines 12-20) in polar liquids and/or polar containing systems including polymer resin systems including epoxy resins, aqueous dispersions, or emulsions – as paints, coatings or adhesives. Barthel et al (column 9, lines 53 et seq) discloses incorporation of the silicas into polymer systems including epoxy systems.

Barthel et al (examples) characterize the silica as having residual carbon contents of 1 % up to about 3 % and including H30, H20 and H30ED. These materials appear to read on the claimed silica.

Barthel et al differs from the claims in an exemplified composition as claimed.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the H30, H20 and H30ED silica in the emulsion compositions including polymer compositions employing organopolysiloxanes or epoxy resins in emulsion form for the advantageous thickening properties of the apolar pyrogenic silicas.

Response to Arguments

15. Applicant's arguments filed 02 August 2010 have been fully considered but they are not persuasive.

16. Claims 15-18 have been addressed in the above objection and rejections. See said objection and rejections above. Applicants do not address the issue that claims 15-18 contain additional subject matter and the fact that the emulsions of claim 10 are not clearly present as claimed in claim 10. This is further evidenced by the fact that said claims are now claimed as "formulated from". Applicants assert a stability for claim 10 that is not clearly present in a composition that is "formulated" or "derived" therefrom.

17. Applicants (page 9 to 13) assert the Barthel '317 reference is distinct based on the declaration evidence, the silica is more hydrophobic than the instant example 2, and the viscosity of the emulsion. This has not been deemed persuasive because applicants declaration evidence is not commensurate in scope with the claims.

Initially, the silica, oil phase and aqueous phases as well as the mean particle size appear indistinct from the Barthel '317 reference. Several parameters effect the stability and viscosity of an emulsion system. As an analogous example, the HLB system was developed to aid in selecting emulsifiers for particular oils and emulsion

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systems. The comparison of a single system by changing the hydrophobic / hydrophilic properties of the emulsifying particles would have been expected to result in different properties.

Some variation would have been expected. Said evidence does not address why said evidence should be extrapolated to the breadth of the claims, which are taught and/or suggested in the broader teachings and the Barthel '317 reference.

18. Applicant (pages 13-14) assert the Binks et al employs the same silica as the Barthel '317 reference. This has been addressed above.

19. Applicants (page 14) assert the Gottschalk-Gaudig et al '405 is made by different methods, the salt employed is not claimed. The viscosity is clearly dependant on the salt, pH, oil type and concentrations. Applicants' comments that the silica solubility is not understood since the silica emulsifying agents are dispersed rather than dissolved.

20. Applicants (page 14) assert the Gottschalk-Gaudig et al '153 is not prior art since it is after applicants' foreign priority date. Applicants have yet to perfect their priority. Said reference clearly qualifies as prior art until then.

21. Applicant (page 15) asserts Binks employs formamide and said use would not result in an emulsion having an aqueous phase. Binks teaches formamide as a replacement and/or equivalent for the water in the aqueous phase. It is generally prima facie obvious to use in combination two or more ingredients that have previously been used separately for the same purpose in order to form a third composition useful for that same purpose. In re Kerkhoven, 626 F.2d 846, 205 USPQ 1069 (CCPA 1980); In re Pinten, 459 F.2d 1053, 173 USPQ 801 (CCPA 1972); In re Susi, 440 F.2d 442, 169

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USPQ 423 (CCPA 1971); In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960).

As stated in Kerkhoven and Crockett, the idea of combining them flows logically from their having been individually taught in the prior art.

22. Applicants (page 9 to 13) assert the Barthel '054 reference is distinct based the characterization of the silica employed in the Barthel '054 reference. Barthel '054 reference teaches the used on silica, H30, H20 and H30ED, which appear to read on those employed in the instant claims.

Conclusion

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David W. Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Daniel S. Metzmaier/
Primary Examiner, Art Unit 1762**

DSM